

LI.S.T. Group

LONG ISLAND
SINCLAIR TIMEX
GROUP

TO:

10 Idle Day Drive
Centerport, N.Y. 11721

Dear Member:

We have a core group now and should schedule a meeting to discuss dues, goals etc. Please call me at the number listed below, and we'll try to arrange a time and place. For openers, lets consider April 1st (Sunday) at 3:00PM, my place.

As for dues, I think \$12.00/year will get us started and cover initial costs.

We'll need volunteers to take on the various functions, e.g., maintaining current member lists, mail drop, meeting arrangements, newsletter, so please think about what you'd like to do.

Please send us any ideas, questions or articles you have written, for inclusion in the newsletter. Also, drop us a line on your system configuration.

Very truly yours,

Paul J. Donnelly

W - 212-572-7603
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```

200 REM RM OUT
201 REM UNLASE CHANNEL 0
202 POS 16514.0
210 PWT
215 LST L=USR 10002
217 REM A IS SURF SCALING
    FACTOR
219 LST X=1
220 LST O=X+PRG 16515
225 BLW
230 GUSW 130
235 GOTO PRG1
240 PRINT

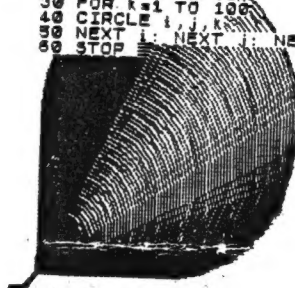
```

Fig. 3(b)
BASIC LAYOUT
FOR A/D CONVERTER

```

10 FOR I=1 TO 10
20 FOR J=1 TO 10
30 FOR K=1 TO 100
40 CIRCLE I, J, K
50 NEXT K
60 STOP

```



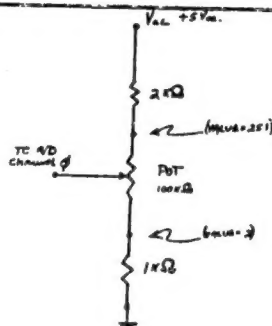
What's wrong with this program?

[illegible]

Fig. 3(a)
WITHOUT

[illegible]

Fig. 4
Pure BASIC LEADOUT
(w/ A-to-D)



```

3000 REM #07:57
6005 F457
6010 A=I:TD=0
6020 DO# 16514,D.
6030 LET L=USR 10402
6040 PRINT "VALUE=";P=2K 10515
6050 GOTO 10515
6060 R=1

```

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VML:2=251
 VML:2=251
 VML:2=251
 VML:2=184
 VML:2=180
 VML:2=088
 VML:2=072
 VML:2=074
 VML:2=074
 VML:2=074

If your X170 keyboard starts acting up, it may be because of your contact between the keyboard's film ribbon reader and the connector. I just noticed 5 keys on the right hand side recently for no apparent reason. A quick look at the X170 schematic shows these keys (B, M, L, R, S) to be controlled by the 38-425 line on the 5 connector block. Apparently, the very thin metal film on the plastic carrier can be dropped off during assembly.

Pull the ribbons out of their slots and hold the ends up to a light. If the metal film was scratched off, you'll see daylight through the traces. Repair is simple. Just take a sharp ^{razor} blade and trim neatly 1/8" from the entire bottom edge of the film cable (don't forget the notch).

Diagnosing the problem is just as easy - If you loose column (e.g., V0,V1,V2 and 6, V,8): you've lost contact with one of the KRC lines (in this case KRC6) on the 5 pin connector. If you've lost (as in my case) you'll loose 5 keys, so suspect the eight pin (100v).

Sample output from VU-10



MAG=001.45 ROT 072.245 Z=+00230

DRIVING THE LED ONE

In any number of monitoring and/or control uses for your EX/75, you may find that using a TV set to check on your system is inconvenient or impractical. This would be so, for example, in outdoor or dirty environments or when you simply wish to check the status of one or two system parameters without the bother of hooking up a TV or monitor. One fairly easy and inexpensive way to do this is to use seven-segment LED (light emitting diode) displays as your system output. Your EX/75 bus doesn't have enough power in reserve to directly drive these displays, but a few simple IC's and an I/O board can give you this capability.

You must have some sort of 8 bit output port. I used Rar-E's Report Generator board, but JK Audio's 310 and even Byte Back's BE-1 module (without the relays) should be useable as a buffered output from your computer. The only other hardware you'll need, aside from miscellaneous wire and some resistors, is a 7416, hex inverting buffer; a 4511 BCD (Binary Coded Decimal)-to-7 segment decoder driver; and a 3 character, 7 segment LED display (MAX3). A schematic of this simple circuit is given in Fig 1.

This circuit represents a "middle ground" approach to producing a 3 digit output display. More hardware (latches etc.) could have been used, resulting in permanently lit displays, or we could have used software to create a controlling outer loop to keep the monitoring function as the main operating system. The combination of hardware and software I chose represents a system which uses multiplexing to provide the appearance of a full three digit display.

As you can see from Figure one, we are using the EX's data lines D₀ through D₃ to send out the binary coded decimal value of one of three digits (units, tens or hundreds). The correct digit is determined by the data lines D₄ through D₆ which complete the path to ground for the appropriate display. Line D₇ enables and latches the last value from lines D₀ to D₃ into the 4511 which in turn, drives the appropriate elements of the display. Multiplexing is provided by the ME software driver routine shown in Fig 2.

After data is POKEd into the three buffer locations (fig 3-a) the ME program outputs the specially constructed character code for each digit in sequence. This operation occurs so rapidly that the eye is fooled into thinking each digit is lit all the time. If you'd like to see what's really happening, you can either increase the dwell time between digits or use the BASIC listing in Fig 4. The BASIC listing requires no machine code but is, of course, slow.

The software is applicable to the Rar-E Report Generator board as it stands. However, you can change the address of the ME at 16534(c) to the address of your own OUTPUT subroutine. The Report Generator uses a PIO and is I/O mapped. For memory mapped systems, your OUTPUT subroutine would probably consist of simply putting the value in the accumulator, loading the designated memory location with the value, and returning to the driver.

I built this circuit on a small ACE (all circuit evaluator) board and obtained its power from the +5 volt regulator on the R.G. board. The values for the current limiting resistors are not critical, but should be as large as possible to conserve power, while still giving adequate brightness. Don't overlook the 10K pullup resistors for the 7416, or forget to tie the unused inputs to ground.

Fig 3b gives a BASIC driver which I use to obtain a temperature reading from the A/D converter on the R.G. board and output that value to the LED display. The code shown would actually be a subroutine called from a main menu. The display is normally blank. By touching, say, "T" on my keyboard, I would be selecting a menu item which calls the Temperature output routine. All this can be done without the need of a TV screen, if I know in advance (and I do) which key to press. The system could be expanded, with more chips, lots of software and perhaps even LCD displays to actually let you program your computer without a TV. A consideration here would be to use hex buffer drivers instead of BCD.

Note too, that I used "junk box" parts from around my shop to build this particular display. A proper design would use perhaps a 74LS248 for the latch driver (pinout is the same as the 4511). Also remember ME to output codes which will turn on all three digits at one time (e.g., code 01111000 produces all 0's), as current drain will be very high.

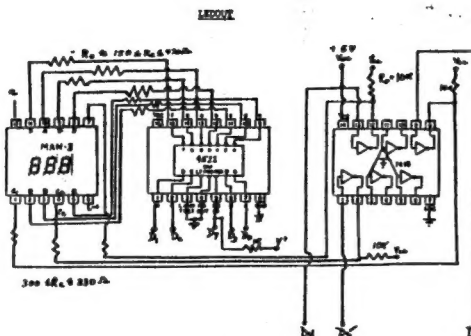


Fig 1 (a)

LEADOUT CODE SENT:

DIGIT	HUNDREDS DIGIT	TENS DIGIT	UNITS DIGIT
0	6A	32	16
1	69	33	17
2	66	34	18
3	67	35	19
4	65	36	20
5	68	37	21
6	70	38	22
7	71	39	23
8	72	40	24
9	73	41	25
H	(H=6A)	(H=32)	(H=16)

EXAMPLE:

To send the number 886, transmit the following codes in sequence:

24, 40, 72

i.e. D₇ D₆ D₅ D₄ D₃ D₂ D₁ D₀

24 0 0 0 1 1 0 0 0

40 0 0 1 0 1 0 0 0

72 0 1 0 0 1 0 0 0

BCD CODE

DIGIT SELECT

LATCH ENABLE

Output will actually be:

72 = 0 which, when
40 = 0-multiplex, looks
24 = 8 like 888

Fig 1 (b)

LEADOUT

NAME	ADDRESS	ME	ME/ME/ME	COMMENT	CODE
LEADOUT	16542	loop	LEAD, LOOP	Load # of digits	010000
MAIN	16543	loop	LEAD, LOOP	Load # of digits	010000
	16544	loop	LEAD, LOOP	# of digits to send	0000
ENTRY	16550	loop	LEAD, LOOP	Save A, Flag	00
	16551	loop	LEAD, LOOP	Get value to be sub- tract from 10000	72
	16552	loop	LEAD, LOOP	16516 is pushed with value	000000
	16553	loop	LEAD, LOOP	Back to original digit count	01
	16554	loop	LEAD, LOOP	Point to next digit	00
	16555	loop	LEAD, LOOP	Only (A-1) digits left	00
	16556	loop	LEAD, LOOP	(A-1) digits left	000000
	16557	loop	LEAD, LOOP	CALL OUTPUT (2000) Send digit out	000000
	16558	loop	LEAD, LOOP	CALL DELAY (4000) Leave it lit	000000
	16559	loop	LEAD, LOOP	JUMP ENTRY (4000) Point to next digit	000000
	16560	loop	LEAD, LOOP	DEC C	00
	16561	loop	LEAD, LOOP	ME	00
	16562	loop	LEAD, LOOP	JUMP MAIN (4000)	000000
	16563	loop	LEAD, LOOP	RETURN	00
	16564	loop	LEAD, LOOP	LD DE, 0000	110000
	16565	loop	LEAD, LOOP	DEC E	00
	16566	loop	LEAD, LOOP	JT 0000	000000
	16567	loop	LEAD, LOOP	JUMP LOC3	000000
	16568	loop	LEAD, LOOP	LD 0000	110000
	16569	loop	LEAD, LOOP	DEC E	00
	16570	loop	LEAD, LOOP	ME	00
	16571	loop	LEAD, LOOP	JUMP LOC3	000000
	16572	loop	LEAD, LOOP	LD 0000	110000
	16573	loop	LEAD, LOOP	DEC E	00
	16574	loop	LEAD, LOOP	JT 0000	000000
	16575	loop	LEAD, LOOP	JUMP LOC3	000000
	16576	loop	LEAD, LOOP	LD 0000	110000
	16577	loop	LEAD, LOOP	DEC E	00
	16578	loop	LEAD, LOOP	JT 0000	000000
	16579	loop	LEAD, LOOP	JUMP LOC3	000000
	16580	loop	LEAD, LOOP	LD 0000	110000
	16581	loop	LEAD, LOOP	DEC E	00
	16582	loop	LEAD, LOOP	JT 0000	000000
	16583	loop	LEAD, LOOP	JUMP LOC3	000000
	16584	loop	LEAD, LOOP	LD 0000	110000
	16585	loop	LEAD, LOOP	DEC E	00
	16586	loop	LEAD, LOOP	JT 0000	000000
	16587	loop	LEAD, LOOP	JUMP LOC3	000000
	16588	loop	LEAD, LOOP	LD 0000	110000
	16589	loop	LEAD, LOOP	DEC E	00
	16590	loop	LEAD, LOOP	JT 0000	000000
	16591	loop	LEAD, LOOP	JUMP LOC3	000000
	16592	loop	LEAD, LOOP	LD 0000	110000
	16593	loop	LEAD, LOOP	DEC E	00
	16594	loop	LEAD, LOOP	JT 0000	000000
	16595	loop	LEAD, LOOP	JUMP LOC3	000000
	16596	loop	LEAD, LOOP	LD 0000	110000
	16597	loop	LEAD, LOOP	DEC E	00
	16598	loop	LEAD, LOOP	JT 0000	000000
	16599	loop	LEAD, LOOP	JUMP LOC3	000000
	16600	loop	LEAD, LOOP	LD 0000	110000
	16601	loop	LEAD, LOOP	DEC E	00
	16602	loop	LEAD, LOOP	JT 0000	000000
	16603	loop	LEAD, LOOP	JUMP LOC3	000000
	16604	loop	LEAD, LOOP	LD 0000	110000
	16605	loop	LEAD, LOOP	DEC E	00
	16606	loop	LEAD, LOOP	JT 0000	000000
	16607	loop	LEAD, LOOP	JUMP LOC3	000000
	16608	loop	LEAD, LOOP	LD 0000	110000
	16609	loop	LEAD, LOOP	DEC E	00
	16610	loop	LEAD, LOOP	JT 0000	000000
	16611	loop	LEAD, LOOP	JUMP LOC3	000000
	16612	loop	LEAD, LOOP	LD 0000	110000
	16613	loop	LEAD, LOOP	DEC E	00
	16614	loop	LEAD, LOOP	JT 0000	000000
	16615	loop	LEAD, LOOP	JUMP LOC3	000000
	16616	loop	LEAD, LOOP	LD 0000	110000
	16617	loop	LEAD, LOOP	DEC E	00
	16618	loop	LEAD, LOOP	JT 0000	000000
	16619	loop	LEAD, LOOP	JUMP LOC3	000000
	16620	loop	LEAD, LOOP	LD 0000	110000
	16621	loop	LEAD, LOOP	DEC E	00
	16622	loop	LEAD, LOOP	JT 0000	000000
	16623	loop	LEAD, LOOP	JUMP LOC3	000000
	16624	loop	LEAD, LOOP	LD 0000	110000
	16625	loop	LEAD, LOOP	DEC E	00
	16626	loop	LEAD, LOOP	JT 0000	000000
	16627	loop	LEAD, LOOP	JUMP LOC3	000000
	16628	loop	LEAD, LOOP	LD 0000	110000
	16629	loop	LEAD, LOOP	DEC E	00
	16630	loop	LEAD, LOOP	JT 0000	000000
	16631	loop	LEAD, LOOP	JUMP LOC3	000000
	16632	loop	LEAD, LOOP	LD 0000	110000
	16633	loop	LEAD, LOOP	DEC E	00
	16634	loop	LEAD, LOOP	JT 0000	000000
	16635	loop	LEAD, LOOP	JUMP LOC3	000000
	16636	loop	LEAD, LOOP	LD 0000	110000
	16637	loop	LEAD, LOOP	DEC E	00
	16638	loop	LEAD, LOOP	JT 0000	000000
	16639	loop	LEAD, LOOP	JUMP LOC3	000000
	16640	loop	LEAD, LOOP	LD 0000	110000
	16641	loop	LEAD, LOOP	DEC E	00
	16642	loop	LEAD, LOOP	JT 0000	000000
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	16644	loop	LEAD, LOOP	LD 0000	110000
	16645	loop	LEAD, LOOP	DEC E	00
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	16647	loop	LEAD, LOOP	JUMP LOC3	000000
	16648	loop	LEAD, LOOP	LD 0000	110000
	16649	loop	LEAD, LOOP	DEC E	00
	16650	loop	LEAD, LOOP	JT 0000	000000
	16651	loop	LEAD, LOOP	JUMP LOC3	000000
	16652	loop	LEAD, LOOP	LD 0000	110000
	16653	loop	LEAD, LOOP	DEC E	00
	16654	loop	LEAD, LOOP	JT 0000	000000
	16655	loop	LEAD, LOOP	JUMP LOC3	000000
	16656	loop	LEAD, LOOP	LD 0000	110000
	16657	loop	LEAD, LOOP	DEC E	00
	16658	loop	LEAD, LOOP	JT 0000	000000
	16659	loop	LEAD, LOOP	JUMP LOC3	000000
	16660	loop	LEAD, LOOP	LD 0000	110000
	16661	loop	LEAD, LOOP	DEC E	00
	16662	loop	LEAD, LOOP	JT 0000	000000
	16663	loop	LEAD, LOOP	JUMP LOC3	000000
	16664	loop	LEAD, LOOP	LD 0000	110000
	16665	loop	LEAD, LOOP	DEC E	00
	16666	loop	LEAD, LOOP	JT 0000	000000
	16667	loop	LEAD, LOOP	JUMP LOC3	000000
	16668	loop	LEAD, LOOP	LD 0000	110000
	16669	loop	LEAD, LOOP	DEC E	00
	16670	loop	LEAD, LOOP	JT 0000	000000
	16671	loop	LEAD, LOOP	JUMP LOC3	000000
	16672	loop	LEAD, LOOP	LD 0000	110000
	16673	loop	LEAD, LOOP	DEC E	00
	16674	loop	LEAD, LOOP	JT 0000	000000
	16675	loop	LEAD, LOOP	JUMP LOC3	000000
	16676	loop	LEAD, LOOP	LD 0000	110000
	16677	loop	LEAD, LOOP	DEC E	00
	16678	loop	LEAD, LOOP	JT 0000	000000
	16679	loop	LEAD, LOOP	JUMP LOC3	000000
	16680	loop	LEAD, LOOP	LD 0000	110000
	16681	loop	LEAD, LOOP	DEC E	00
	16682	loop	LEAD, LOOP	JT 0000	000000
	16683	loop	LEAD, LOOP	JUMP LOC3	000000
	16684	loop	LEAD, LOOP	LD 0000	110000
	16685	loop	LEAD, LOOP	DEC E	00
	16686	loop	LEAD, LOOP	JT 0000	000000
	16687	loop	LEAD, LOOP	JUMP LOC3	000000
	16688	loop	LEAD, LOOP	LD 0000	110000
	16689	loop	LEAD, LOOP	DEC E	00
	16690	loop	LEAD, LOOP	JT 0000	000000
	16691	loop	LEAD, LOOP	JUMP LOC3	000000
	16692	loop	LEAD, LOOP	LD 0000	110000
	16693	loop	LEAD, LOOP	DEC E	00
	16694	loop	LEAD, LOOP	JT 0000	000000
	16695	loop	LEAD, LOOP	JUMP LOC3	000000
	16696	loop	LEAD, LOOP	LD 0000	110000
	16697	loop	LEAD, LOOP	DEC E	00
	16698	loop	LEAD, LOOP	JT 0000	000000
	16699	loop	LEAD, LOOP	JUMP LOC3	000000
	16700	loop	LEAD, LOOP	LD 0000	110000
	16701	loop	LEAD, LOOP	DEC E	00
	16702	loop	LEAD, LOOP	JT 0000	000000
	16703	loop	LEAD, LOOP	JUMP LOC3	000000
	16704	loop	LEAD, LOOP	LD 0000	110000
	16705	loop	LEAD, LOOP	DEC E	00
	16706	loop	LEAD, LOOP	JT 0000	000000
	16707	loop	LEAD, LOOP	JUMP LOC3	000000
	16708	loop	LEAD, LOOP	LD 0000	110000
	16709	loop	LEAD, LOOP	DEC E	00
	16710	loop	LEAD, LOOP	JT 0000	000000
	16711	loop	LEAD, LOOP	JUMP LOC3	000000
	16712	loop	LEAD, LOOP	LD 0000	110000
	16713	loop	LEAD, LOOP	DEC E	00
	16714	loop	LEAD, LOOP	JT 0000	000000
	16715	loop	LEAD, LOOP	JUMP LOC3	000000
	16716	loop	LEAD, LOOP	LD 0000	110000
	16717	loop	LEAD, LOOP	DEC E	00
	16718				